

***What is claimed is:***

1. An inspection system for detecting defects on a sample, the inspection system comprising:

5 an optical subsystem configured to collect ultra violet light emanating from the sample, the optical subsystem including an optical component having an exposed optical surface;

a detector configured to receive the collected light from the optical subsystem and to generate an image of at least a portion of the sample with the received light;

10 an analyzer configured to determine whether there are any defects present on the portion of the sample by analyzing the image generated by the detector; and

a mechanism configured to protect the exposed optical surface of the optical component of the optical subsystem from contaminants that are capable of adversely effecting the optical quality of the optical component.

15 2. The system as recited in claim 1 wherein the mechanism includes a gas purge system configured to produce a gas stream that blocks contaminants from reaching the exposed optical surface of the optical component and that transports the contaminants away from the optical surfaces of the optical component.

20 3. The system as recited in claim 2 wherein the gas stream is disposed between the sample and the optical component.

25 4. The system as recited in claim 3 wherein the gas stream flows parallel to the optical component.

5. The system as recited in claim 2 wherein the gas stream is symmetrical.

6. The system as recited in claim 2 wherein the gas stream is asymmetrical.

30 7. The system as recited in claim 2 wherein the gas purge system comprises a cover disposed between the optical component and the sample, the cover being configured to allow light to pass between the sample and the optical component, and to form the gas stream between the sample and the optical component.

8. The system as recited in claim 2 wherein the mechanism further includes a transparent cover that physically blocks contaminants from reaching the optical surface of the optical component.

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9. The system as recited in claim 1 wherein the mechanism includes a transparent cover that physically blocks contaminants from reaching the optical surface of the optical component.

10 10. The system as recited in claim 9 wherein the transparent cover includes an optical membrane and a frame

11. The system as recited in claim 10 wherein the optical membrane is disposed between the sample and the optical component

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12. The system as recited in claim 1 wherein the sample is associated with semiconductor manufacturing.

13. The system as recited in claim 12 wherein the sample is a reticle, mask or wafer.

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14. The system as recited in claim 1 wherein the optical component is a lens.

15. The system as recited in claim 1 wherein the contaminants correspond to hydrocarbons, inorganics or moisture.

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16. A gas flow system capable of being used in an optical inspection system, the gas flow system comprising:

30 a means for flowing a gas stream in front of an exposed optical surface of the optical inspection system so as to prevent contaminants from adversely effecting the exposed optical surface of the optical inspection system.

17. The system as recited in claim 16 wherein the optical surface is associated with a lens capable of directing UV light.

18. The system as recited in claim 16 wherein flowing a gas stream in front of the exposed optical surface effectively removes the contaminants in a region proximate the exposed optical surface.

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19. The system as recited in claim 16 wherein the gas stream is routed across the exposed optical surface substantially transverse to the optical axis of the exposed optical surface.

10 20. The system as recited in claim 16 wherein the gas stream is routed away from the exposed optical surface substantially parallel to the optical axis of the optical surface.

21. A system for inspecting substrates, comprising:  
15 an optical subsystem having a front lens; and  
a cover disposed between the front lens and the substrate to be inspected, the cover having an opening that allows ultra violet light to pass between the front lens and the substrate to be inspected, the cover defining at least in part a channel within in which a gas stream is created for the purpose of preventing particles from depositing  
20 on the front lens.

22. In a system comprising a lens and a semiconductor substrate, a method of processing the semiconductor substrate, comprising:  
disposing the lens along an optical path;  
25 exposing the semiconductor substrate to UV radiation, wherein the light propagates through the lens along the optical path; and  
disposing a transparent cover proximately to the lens to protect the lens from contamination.

30 23. A system for processing a semiconductor surface, comprising:  
a lens disposed along an optical path;  
a transparent cover disposed proximately to the lens between the lens and the semiconductor surface to protect the lens from contamination.